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GEOGRAPHIC SCHOOL BULLETINS

Published Weekly by

THE NATIONAL GEOGRAPHIC SOCIETY

(The National Geographic Society is a scientific and educational Society, wholly altruistic, incorporated as a non-commercial institution for the increase of geographic knowledge and its popular diffusion. General Headquarters, Washington, D. C.)

NOTICE

By releasing for newspaper publication a series of articles and maps entitled "Where Are the Yanks?" the National Geographic Society has been cooperating with 167 leading Sunday newspapers in helping schools teach the geography of places where Americans fight. In response to requests from teachers who missed the earlier articles in the newspapers, this series will appear in the GEOGRAPHIC SCHOOL BULLETINS, beginning with this issue.

February 21, 1944. Vol. XXII. No. 31.

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SEAGOING SOLOMON ISLANDERS ARE SOMETHING FOR YANKS TO WRITE HOME ABOUT

This handsome bronze-skinned youth — a "salt-water" (coast) native of the Solomons — lives on Santa Catalina Island, at the southeastern end of the island chain. Owa Riki is the native name for Santa Catalina. This island, which has changed little since Mendaña discovered the Solomons in the 16th century, has no missions, no resident officials, no schools. The men of the island teach the boys to fish, to build canoes, to fashion bows and arrows. On Owa Riki shells are used for jewelry and to inlay designs on ceremonial canoes; polished to disks they serve as money. This islander wears simple clamshell earrings. His type is familiar to Yanks stationed in the Solomons (Bulletin No. 1).

Alan J. Villiers

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GEOGRAPHIC SCHOOL BULLETIN

HOW TEACHERS MAY OBTAIN THE BULLETINS

The Geographic School Bulletins are published weekly throughout the school year (thirty issues) and will be mailed to teachers in the United States and its possessions for one year upon receipt of 25 cents (stamps or money order); in Canada, 30 cents. Originally entered as second-class matter January 27, 1922; re-entered as of April 27, 1943, Post Office, Washington, D. C., under Act of March 3, 1879. **Copyright, 1944, by National Geographic Society, Washington, D. C. International copyright secured. All rights reserved. Quedan reservados todos los derechos.**

Where Are the Yanks? 1. The Solomon Islands

(This is the first in a series of articles about the regions where American service men and women are stationed.)

CONSIDER the Solomons in all their green glory. Their early leap from obscurity to spotlight position as a center of naval, air and land action by United States forces earns them first place in this series.

Certain facts stand out in the minds of even the least observant Americans who have been stationed there. Rain-soaked and tropical, the islands are almost countless. Many are coral pin-points. A few are as large as small States back home.

The largest are ridged with high mountains, verdant with forests and lush vegetation. Their shores are dotted with coconut plantations and hut villages of dark-skinned natives, mostly bearded, short, stocky, and superstitious (illustration, cover).

There are no wild beasts larger than small pigs and big rats. Birds are abundant, strange, screaming and colorful. Oversized mosquitoes murder sleep by night, and sticky, shoo-less flies are a plague by day.

So much is soon obvious. What geography have the more observant American fighting men in the Solomons learned?

Seven Big Islands Make Giant Steppingstones

The Solomon Islands lie about 6,000 airline miles southwest from San Francisco. Stretching 700 miles southeast to northwest (map, next page), they form the middle of the arc of islands known as Melanesia. A thousand miles southwest across the Coral Sea is the Great Barrier Reef coast of Australia. Directly west is New Guinea, its nearest land point 400 miles away across island-dotted waters.

The seven largest Solomons define the double chain that almost encloses a large ocean lake. Land area of the entire group is double that of New Jersey. Population is estimated at 140,000—about matching Trenton, New Jersey's capital.

Starting from San Cristóbal, southeast anchor of the double chain, a giant might stride forth, using the seven large islands for steppingstones. Heedless of razor-back mountain ridges, he would plant his right foot on populous Malaita, then his left foot on famous Guadalcanal. Between them nestle Florida and Tulagi, forming the finest harbor in the Solomons.

Next, the giant's right foot would bear down on long, narrow Santa Isabel, where natives build giant war canoes and ride the surf on boards as in distant Hawaii. This stride would pass Savo and the Russells.

Bougainville and Malaita Most Populous

His left foot would land on New Georgia, central unit of the New Georgia cluster. His next step and sixth large island would be right foot to reef-encircled Choiseul. His march would end on Bougainville, largest of the Solomons and northwest anchor of the double chain.

Bougainville, 125 miles long and 48 miles maximum width, has nearly one-fourth of all Solomons land area. Its mountains are highest, reaching above 10,000 feet in the north. Mt. Bagana, one of several smoke-plumed volcanoes, was in violent eruption in 1937. Harbors and anchorages at Kieta, Buin, and Buka Passage are ranked among the best in the islands. With Malaita, Bougainville shares two-thirds of all the islands' population.

Guadalcanal, second largest of the islands, has flat grasslands bordering its northern coast. They led to its selection as a base for air power. The busy Henderson Field site was first picked by the Japs. Gold has been found in the Guadalcanal mountain ridge, which rises to 8,000 feet.

In the New Georgia group, more level grasslands and scores of islands with narrow passages and bays made natural settings for bold land and sea action. Vangunu, Rendova, cone-shaped Kolombangara and Vella Lavella are large units of the now historic cluster.

Stories of traders and missionaries and occasional disappearances of white visitors in the late 19th century established proof of some native taste for "long pig." Head-hunting expeditions against neighboring tribes were long popular, not for the sake of human meat, but because a string of skulls was considered proof of courage and bravery. The practice of "black-birding," kidnaping natives for labor on distant coconut plantations, gave Solomon Islanders ample reason for distrusting white visitors.

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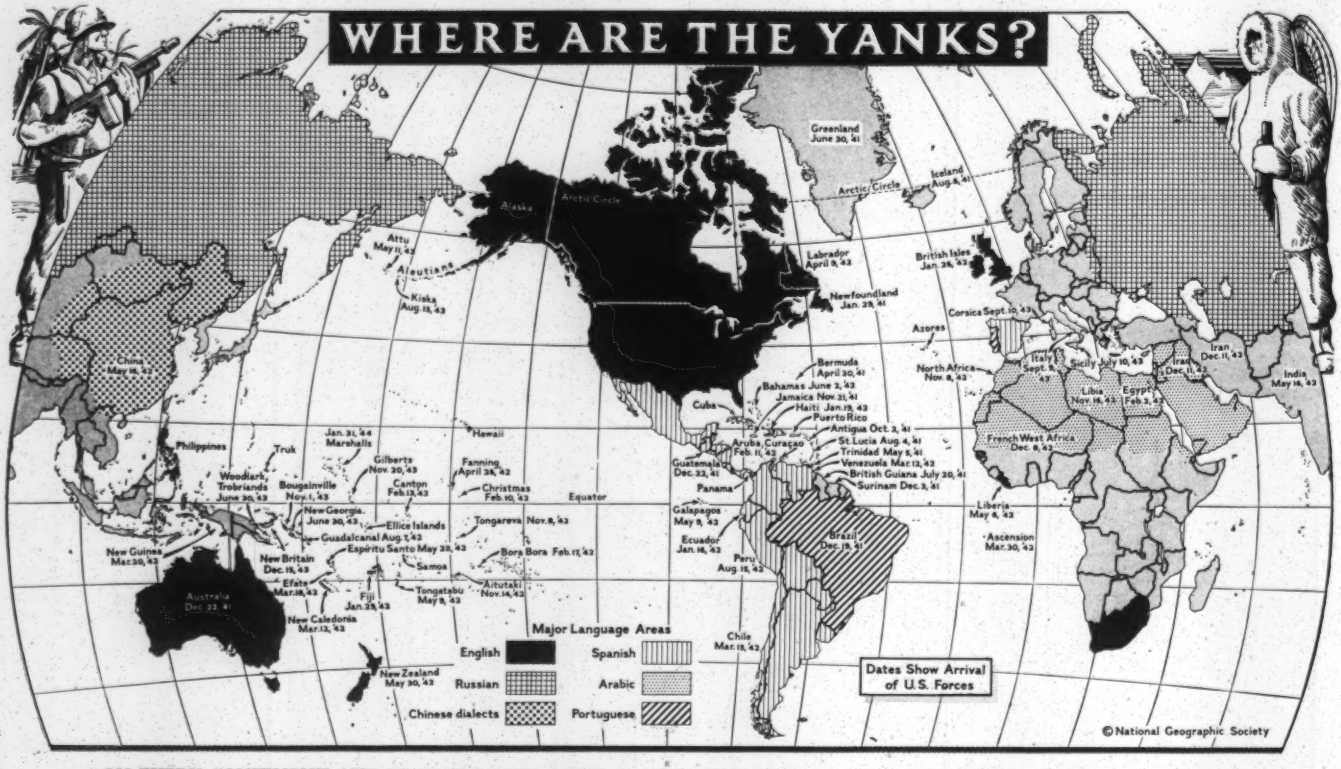

ON EVERY CONTINENT AND IN EVERY OCEAN THE YANKS ARE LEARNING—AND TEACHING—WORLD GEOGRAPHY

Relatives and friends of men in foreign service, teachers, and students can see from this map where American forces are stationed. The map, showing when Americans arrived in each area and what language they must cope with, enables students to see the relation between world strategy and the individual areas which will be described in forthcoming articles of the "Where Are the Yanks?" series (Bulletin No. 1).

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General Headquarters, Washington, D. C.

Roll Call of the Soviet Union's Sixteen Member Republics

WHAT are the sixteen republics of the Soviet Union which the Supreme Soviet (the Russian Parliament) has announced will henceforth have autonomous rights of looking after their own foreign policy and national defense?

Before the war, the Soviet Union was made up of eleven constituent, or member, republics. They spread over a vast area approaching three times the size of continental United States. No other nation in the world covered more territory. Their population was roughly one and a third times as large as that of the United States.

Five New Units Added in 1940

Five additional republics were joined to the Soviet Union during 1940. The Karelo-Finnish Soviet Socialist Republic, formed partially of territory ceded by Finland, was added in March, 1940.

The Moldavian Republic, made up of land inhabited by Moldavians already in the Soviet Union, plus parts of Romanian-held Bessarabia, was set up in August, 1940. The Estonian, Latvian, and Lithuanian Republics on the Baltic were annexed in August, 1940.

Other western territories taken into the Soviet Union prior to that time were added to existing republics. The area in eastern Poland occupied by Russia in 1939 was divided according to nationality, the northern part being incorporated into the White Russian Soviet Socialist Republic and the southern part into the Ukrainian Soviet Socialist Republic. To the Ukraine also were joined Romanian-ceded northern Bukovina and districts of Bessarabia not already included in the Moldavian Republic. The Ukrainian Soviet Socialist Republic ranked as the third-largest of the member republics.

One Huge Republic as Core, Fifteen Smaller as Fringe

All the new republics along the western borders of the Soviet Union, and the additions to the White Russian and Ukrainian Republics, augmented the total area by less than 175,000 square miles, or roughly one-fiftieth of the Soviet Union's entire extent.

In all, at the time of the Nazi attack in the summer of 1941, the Soviet Union had about 8,348,000 square miles of territory. Its scattered and varied peoples gave it a total population of more than 193,000,000.

Looking on a map of the Eastern Hemisphere, you see the U.S.S.R.'s expanse of land stretching from mid-Europe to the Pacific.

Largest republic of the Union is the huge Russian Soviet Federated Socialist Republic, with well over six million square miles. The R.S.F.S.R., or Russia proper, as the big unit is popularly known, occupies nearly four-fifths of the Soviet Union's entire area. It not only accounts for all of the Soviet Far East, but a sweeping share of the west as well. It includes Moscow, Leningrad, Stalingrad, and other key Russian cities.

A roll call of the other republics hints at the extent and variety of land and peoples within the boundaries of the continent-straddling Soviet Union. Unfamiliar to most western ears are the names of the Central Asia republics, the Kazakh, Uzbek, Tadzhik, Kirghiz (Kirgiz) (illustration, next page), and Turkmen S. S. Republics. To their vast heat-shimmering plains, broad plateaus, and

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The 20th century saw cannibalism and blackbirding recede far into the past. Administrators at Tulagi, for the British Protectorate part of the islands, and at Kieta, for Bougainville and Buka in the Australian Mandate part, have earned native respect. Missionaries, whose lot was once hard indeed, have made slow progress against deep-rooted superstitions and the ancient feuding between inland and coastal tribes.

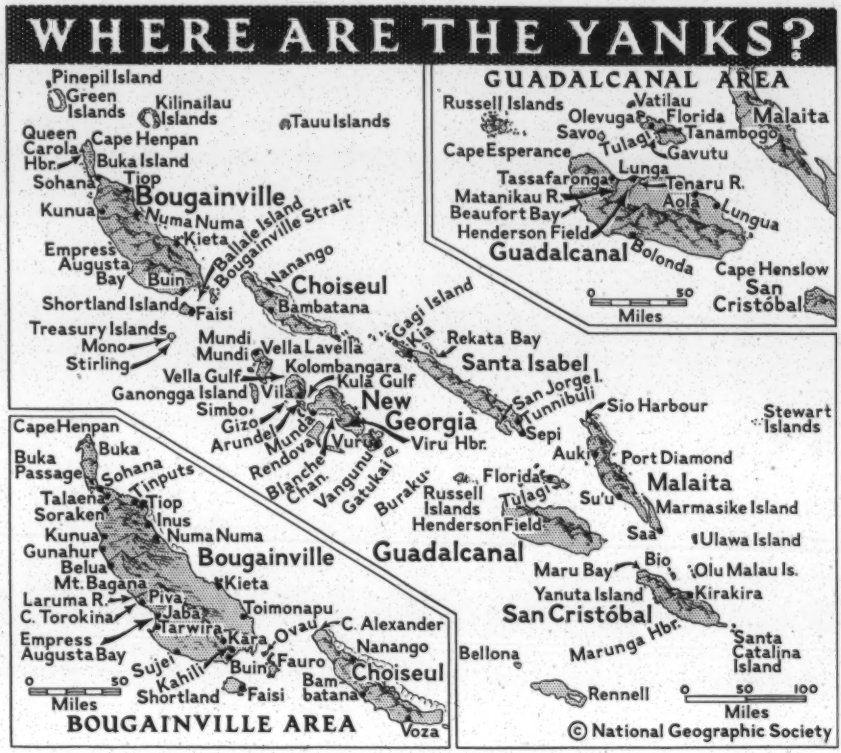
As the war cloud passes northward, the natives resume work on plantations or gathering for export ivory nuts, sandalwood, and the trochus shells from which "pearl" buttons are made. Thousands are small farmers, raising taro root and pigs. Other thousands live on nature's gifts along the islands' shores.

NOTE: The Solomon Islands are shown in a large-scale inset on the Society's Map of the Pacific Ocean.

For additional information, see "A Woman's Experiences among Stone Age Solomon Islanders," in the *National Geographic Magazine* for December, 1942; "Treasure Islands of Australasia," June, 1942*; and "North About," February, 1937* (*Issues marked by an asterisk are included in a special list of Magazines available to teachers at 10¢ each in groups of ten.*)

See also these GEOGRAPHIC SCHOOL BULLETINS: "Newer Battlefields in the Solomon Islands," November 22, 1943; and "Island Bastions in the Solomons Barricade," October 4, 1943.

Bulletin No. 1, February 21, 1944.



FOR MANY AMERICANS, "SOMEWHERE IN THE PACIFIC" MEANS THE SOLOMONS

His wartime address may be "A.P.O. . . ., c/o Postmaster, San Francisco" to you, but to many a Yank it is the Solomon Islands. From Guadalcanal to Bougainville they have pushed the Japs back along these steppingstones to Tokyo. The maps show the major islands of the 700-mile chain, with insets for detailed study of the two largest, Guadalcanal and Bougainville—the beginning and end points respectively of the American campaign in the Solomons. This island group first became known to Europeans when Mendaña, the Spanish explorer, happened upon it in 1568. He suggested (incorrectly) that this might have been the source of gold for King Solomon's temple in Jerusalem; hence the name. Later voyagers could not find the islands; they became a Pacific question mark until rediscovered two full centuries afterward.

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Sixth Geographic-Smithsonian Expedition Takes Field

THAT the sixth National Geographic Society-Smithsonian Institution Archeological Expedition has left Washington for southern Mexico, to continue extensive studies of pre-Columbian civilizations, has been announced by Dr. Gilbert Grosvenor, president of the Society.

The expedition is led by Dr. Matthew W. Stirling, chief of the Bureau of American Ethnology of the Smithsonian Institution. Members of the expedition will include Mrs. Stirling, an archeologist in her own right, and Richard Stewart, of the National Geographic's staff of cameramen.

On the five previous expeditions Dr. Stirling and his small group of scientists have cut their way through Mexico's forests, dug deep into burial mounds, and unearthed stone carvings and other works of art to enlighten the world on early American peoples. These forgotten predecessors of modern Americans built ornate temples, performed amazing feats of sculpture with their crude implements, carried jade-headed axes, and wore jade necklaces worth a king's ransom.

Seek Lost City in Jaguar-Haunted Jungle

The expedition's objective this year is an archeological survey of the headwaters of the Tonalá River in Tabasco, Veracruz, Chiapas (illustration, next page), and Oaxaca States of southern Mexico.

This region is dotted with unopened mounds which may prove to be rich sites of the ancient culture of the Olmec people. Their civilization preceded those of the more widely known Toltecs, Huastecs, Aztecs, and Mayas.

A special goal of the expedition will be the lost city of Pueblo Viejo, on the upper waters of the Tonalá's tributary, Rio de las Playas. This will involve exploration by dugout canoe of a region that is sparsely inhabited and drenched with torrential rains.

Revealed Civilization Famed for Its Artists

The five previous expeditions which have unveiled ancient Olmec culture worked at three sites near the coast of southeastern Mexico. The first expedition operated at Tres Zapotes in Veracruz, not far from the town of San Andrés Tuxtla. This site yielded the first of the sensational giant stone heads found by Dr. Stirling. There also was unearthed one of the most significant discoveries of American archeology—the stone column carved with a date which is the oldest yet found in the Western Hemisphere. The date has been correlated with the modern calendar and deciphered as November 4, 291 B.C.

The second expedition made further excavations at Tres Zapotes and later opened up the headline-making site of La Venta, to the east in Tabasco State. Among the early finds at La Venta were five more of the colossal stone heads carved from basalt, the largest weighing more than 40 tons. No stone of this type exists nearer than Tuxtla, about 75 miles north. It is unknown how the enterprising La Venta people could transport the massive blocks of stone to the swampy site where they were found. Also, lacking metal implements, it is remarkable that the early artists were able to carve such colossal sculptures.

A replica of one of the largest of these heads is one of the recently acquired museum exhibits of Washington, D. C. It is on display in the National Geographic Society's Explorers Hall.

The third expedition explored the site of Cerro de las Mesas, about 50 miles northwest of Tres Zapotes in Veracruz State. Excavations there revealed a cache

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snow-capped mountains, the Germans failed to penetrate.

In the Caucasus isthmus of the south are the other three republics, the Georgian, Azerbaijan, and Armenian Republics.

All of the western republics, to a greater or less degree, felt the force and devastation of the Nazi invasion, from the rich and populous Ukraine to the sparsely settled far northwest Karelo-Finnish region, with its forests of fir and pine, its many lakes, its winter-frozen wastes.

In the western reaches of the R.S.F.S.R., the invasion tide rolled eastward in an uneven line that stopped short of central Moscow, surrounded and isolated Leningrad, and broke on the Volga city of Stalingrad. The German advance had covered in all an estimated half-million square miles—or roughly one-sixteenth of the Soviet Union's territory.

NOTE: The Republics of the Soviet Union, in both Europe and Asia, are shown on the Society's Map of Asia and Adjacent Areas.

For additional information, see "I Learn About the Russians," in the *National Geographic Magazine* for November, 1943; "'Magnetic City,' Core of Valiant Russia's Industrial Might," May, 1943; and "Mother Volga Defends Her Own," July, 1942*.

See also the following GEOGRAPHIC SCHOOL BULLETINS: "War Geography of U.S.S.R. Has Similarities in U. S. A.," November 24, 1941; and "Soviet Union, Giant Among Nations," October 6, 1941.

Bulletin No. 2, February 21, 1944.

Sovfoto

THE ISOLATED KIRGHIZ S. S. REPUBLIC REACHES FOR ITS PLACE ON THE MAP

One of the Soviet Union's member republics in Central Asia, the Kirghiz Soviet Socialist Republic does not appear on the map of Europe (background); it is far to the east, just north of India, just west of China's Sinkiang. Bounded by the lofty Tien Shan, it holds the highest Russian peaks. Its area (76,000 square miles) matches that of South Dakota, but its population is more than twice as great (one and a half million). Formerly nomadic herdsmen, the Kirghiz people were illiterate; now, freshly provided with an alphabet, they are recording their literature for the first time. Old bards are reciting before a scribe; the bard at the left has recounted an epic of 400,000 lines. Now Frunze, the Kirghiz capital, has railway connections with main Russian lines. Osh is the site of a modern silk factory. The traditional occupation of stock breeding is being augmented with raising sugar beets and mining coal, mercury, and cinnabar. Kirghiz fliers serve in the U.S.S.R.'s air force.

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Oil-Dieted Spain a Battleground of Economic War

NEUTRAL or not neutral? In weighing the questionable neutrality of Spain, the State Department of the United States has charged that country with aiding the Axis with supplies, troops, asylum to Italian ships, and free rein to Axis agents. One of the incidents that preceded these charges was the discovery of time bombs in cargoes of Spanish oranges and onions shipped to England.

An outcome of the questioning of Spain's neutrality has been a United States embargo on shipments of oil to the nation at Europe's western edge. A pauper in petroleum, Spain must depend on imports to operate the trucks and ships essential for distributing food throughout the country. The railroads, damaged during years of civil war, are further handicapped by the nation's shortage of coal. A large part of the coal supplies are normally imported from England.

Offers Mercury and Other Metals for Making Munitions

Though a non-belligerent since civil war subsided in 1939 into an uneasy peace, Spain has been a grim battleground of economic warfare. There Axis customers and the Allies have struggled for ascendancy with weapons of money and food. The United States has conducted a campaign of "preventive buying"—purchasing supplies to prevent their being sold to the Axis.

Among the materials over which purchasing battles have been waged are Spain's bountiful stores of mercury, of which that country has the richest in the world. The Almadén deposits, found about 125 miles southwest of Madrid, in normal peaceful times yield about half of the globe's output. In war the silvery liquid metal becomes a munitions maker's treasure because of its use in explosives.

Manganese and tungsten for processing steel, high-grade iron ore from Bilbao, and iron pyrites from which sulphuric acid can be made are other products of Spanish mines which war-making nations need.

Copper also, for lack of which Germany suffered in the first World War, has been for sale in Spain. In the province of Huelva in the southwest, the rich British-controlled mine of Rio Tinto produced more than half the country's copper before the war. The wiring of electric instrument panels and light and power lines, the brass jackets of cartridges and artillery shells are some of war's copper uses.

Top Supplier of Cork, Olives, and Oranges

A check of Spain's fifty provinces shows that under conditions of peacetime production twenty would have mineral resources of commercial value. Barcelona has coal, lead, and potash; Granada and Jaén have iron and lead; Murcia, lead and sulphur; Gerona, lead with fluorspar as a by-product, important as a flux in the process of making steel.

Of cork, needed for lifebelts and insulation, Spain has been the world's leading supplier. German factories have experimented with using Spanish eucalyptus wood in the manufacture of rayon.

Of Spain's entire territory (something over 192,000 square miles) an estimated 32 per cent is arable (illustration, next page). In normal times, the country is the world's No. 1 producer of olive oil and "brined" olives. Another important food resource is fish, mainly sardines, tuna, and anchovies.

Spain's "have" and "have not" lists are revealing. For normal export, in addition to minerals and cork, she has wine, olives and olive oil, oranges, lemons,

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of jade treasure such as would amaze fortune-hunters as well as archeologists. More than 700 objects of jade were found—beads, axes, carved figurines, necklaces, and 70 carved ear plugs, the largest of which were 4½ inches across.

Jade also was prominent among the treasures unearthed by the fourth and fifth expeditions, working again at the rich site of La Venta. Some of the La Venta jade was emerald-clear, of the highest quality known to jewelers and previously obtained only from Burma. In one burial chamber at La Venta were found 37 jade ax heads, so highly polished and delicately shaped that they were obviously made for decorative purposes and ceremonial occasions rather than for everyday use.

The ax appears to have had a religious significance for the La Venta people, perhaps comparable to such symbolism as that of the cross in the Christian religion.

Richard H. Stewart

HE SELLS SAWED SALT FOR SALTCELLARS

Ancient crafts and customs survive in the Mexican States where the sixth National Geographic Society-Smithsonian Institution Expedition will search for ruined cities of pre-Columbian Americans. This Zotzil Indian in the market of Ciudad de las Casas, in Chiapas, is an unwitting heir to many traditions of forgotten cultures. His sandals, with high leather backs, are a relic of Mayan styles. He dips brine from wells and evaporates it to make sugarloaf cylinders of salt which he brings to market in sheaths of straw (left). With the crude saw lying on the ground (left foreground) he saws off a portion to his customer's order.

Jaguar as Symbol

Another symbolic motif was that of the jaguar, an animal that still roams the jungle of the vicinity. Possibly four-fifths of the La Venta decorations represented the jaguar in some form—carved on a heavy stone sarcophagus, painted in red on a jade axhead, worked into the design of mosaic floors of green paving stones, laid in asphalt.

The skill of primitive La Venta artists was remarkable, either in sculpturing the gigantic basalt heads or in carving and polishing a tiny jade bead perforated with a hair-size hole.

NOTE: For further information, see "La Venta's Green Stone Tigers," in the *National Geographic Magazine* for September, 1943; and "Finding Jewels of Jade in a Mexican Swamp," November, 1942.

See also these GEOGRAPHIC SCHOOL BULLETINS: "La Venta Giant Head Comes to Washington," October 25, 1943; and "La Venta an Ancient Indian Mecca," October 4, 1943.

Bulletin No. 3, February 21, 1944.

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Why Can't Volcanoes Be Bombed into Eruption?

VOLCANOES fume above battlefields in Italy, rumble and smoke in sight of enemy bases on Pacific islands, boil and simmer on the home islands of Japan itself. A recurring question often asked by faraway fireside generals is, "Why not bomb these volcanoes into activity and make them fight on our side, erupt over enemy countrysides, destroy enemy property, and undermine enemy morale?"

Such a dream of enlisting subterranean volcanic allies on a big scale ignores the mighty forces that make these fiery mountains "tick," aside from all other considerations.

A volcanic eruption cannot be made to order. The explosive type of eruption —which throws ashes, sand, gases, and sometimes chunks of mountain as well into the air—involves underground forces thousands of times greater than the multiple explosion of the largest bombs. In comparison, an earthquake explosion would make the discharge of a 16-inch gun sound like the bursting of a paper bag.

Eruption Starts at Great Depth

The power behind a volcanic explosion comes from the squeezing force of gravity itself and the explosive forces of steam and gases heated by tremendous temperatures of the earth's molten white-hot core. By contrast with these, the heaviest bombardment of man-made explosives would seem a mere drop in the bucket.

A volcanic eruption originates far from the mouth of the volcano, deep in the earth, probably many miles down. From the subterranean cauldrons of these superheated depths comes the boiling melted rock, or lava, which is an essential part of most eruptions. As the underground cauldrons begin to boil over, the lava is pushed gradually up the pipe of the volcano until it comes to the earth's surface at the crater, where it flows over or is exploded out. The eruption is therefore not a surface activity, but a visible sign of unseen activity in the invisible rock-cooking kitchens of the inner earth.

Bombs Could Not Wake Sleeping Volcano

When an eruption has run its course, the lava in the pipe cools and solidifies. If it completely seals up the pipe with a plug of rock, the volcano becomes dormant or extinct. If the pipe is choked down to very small proportions, so that a trickle of lava and hot gases rise to keep a little cauldron of molten rock bubbling in the crater, the volcano remains slightly active.

All the bombs in existence dropped on the top of the cold, solid plug of a dormant volcano could not wake the sleeping forces far below. In the case of a slightly active volcano, the explosion of even the biggest bombs would do little more than splash lava about the crater. They could not create the great subterranean forces whose absence had kept activity at a low level.

Bombs have been used advantageously in controlling the direction of a lava flow, by making safety valve openings during an eruption. On the slopes of Mauna Loa (illustration, next page) on the island of Hawaii, lava streams that threatened to flow into the city of Hilo have been turned aside by bomb explosions.

NOTE: For additional information, see "Paricutin, the Cornfield That Grew a Volcano," in the *National Geographic Magazine* for February, 1944; "We Keep House on an Active Volcano," October, 1939*; and "Hawaii Then and Now," October, 1938*.

grapes, raisins, potatoes, onions, and esparto grass (for paper, baskets, cordage). Now needed by her people are grains and milk. Food has been an acute problem in Spain's post-civil-war years. Oil, coal, machinery, chemicals, and cotton also are required for the country's partially war-wrecked industry and transportation. Cotton, to the extent of a quarter-million bales, has been supplied by the U. S.

Nature is kind in the north. Fruit trees tint the coastal regions with bright blossoms, bear good yields of apples, pears, and cherries. The northern coast was Spain's playground before the war.

Mediterranean Spain is a coastal belt of artificial fertility, where irrigation takes the place of rain. It all began more than a thousand years ago when Moors from Africa brought the orange, the mulberry, and the "know how" to make the desert bloom. Moorish agriculture centered in the areas between Córdoba and Sevilla. The provinces of Valencia and Murcia are especially known for their oranges, Málaga for its grapes. The palms of Elche bear tons of dates. Cotton, rice, almonds, and sugar beets are grown in the south.

Between the coasts is the dry and windy upland—the Meseta—comprising three-fourths of Spain's area. With grudging soil and rigorous climate, much of it is given over to pasture land. Most of the cities are in the milder and more fertile coastal regions.

NOTE: Spain is shown on the Society's Map of Europe and the Near East.

For further information, see "Turbulent Spain," in the *National Geographic Magazine* for October, 1936*; "Palette from Spain," March, 1936; "Pursuing Spanish Bypaths Northwest of Madrid," January, 1931*; and "On the Bypaths of Spain," March, 1929*:

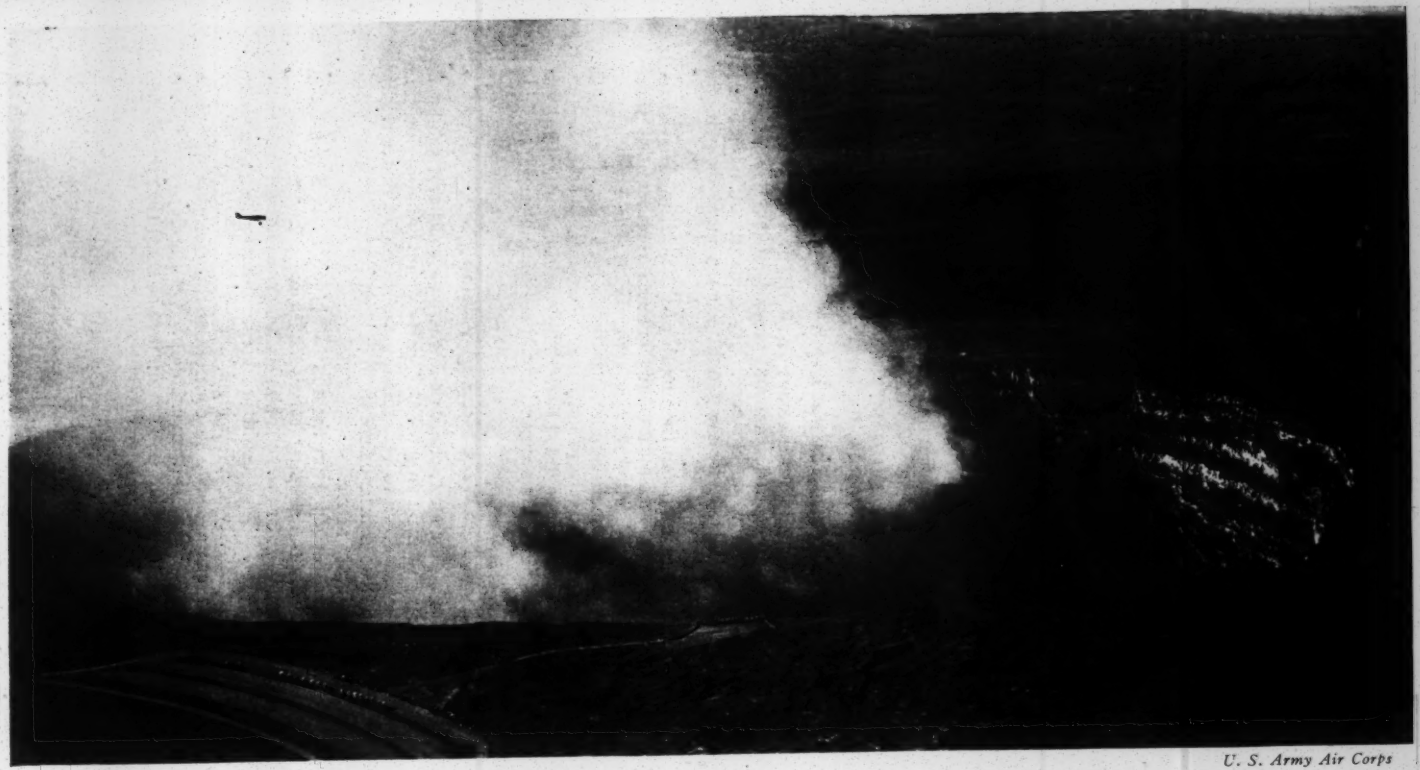
See also, in the GEOGRAPHIC SCHOOL BULLETINS: "Spain: The 'Hungry Man' of Europe," March 3, 1941; and "Spain is Wooed for Mineral Merchandise," December 18, 1939.

Bulletin No. 4, February 21, 1944.

Dr. Gilbert Grosvenor

THE GRUDGING FARMS OF UPLAND SPAIN LEAVE SPANIARDS HUNGRY

In contrast to the warm and fertile green border along Spain's irrigated southern coast, the central plateau, known as the Meseta, suffers from extremes of heat and cold, flood and drought. A well beneath a single tree (center) is a semi-oasis. Extensive pasture lands, patches of farms, vineyards, and orchards made the Meseta productive before war drained off much of the country's manpower. The railroad between Córdoba and Toledo crosses the plateau between farms, with mountains in the background. The right of way is fenced off with old railroad ties sharpened into pickets. Difficulties with crops and with transportation have combined to bring Spain the threat of famine.



U. S. Army Air Corps

KILAUEA, NATURE'S BOMBER, DWARFS THE MAN-MADE BOMBER IN SIZE AND EFFECT

Gouged out of the eastern slope of Mauna Loa, Kilauea Crater sends steam clouds skyward from the depths of its firepit, Halemaumau. Over 4,000 feet above sea level, the surface of the crater is paved with souvenirs of centuries of volcanic eruptions—cindery lava called *aa*, and the smooth twisted variety, *paboeboe*, which looks like black molasses candy. The crater walls rise cliff-like to 500 feet in places. From the northern rim a trail winds down to the hardened lava floor, which forms an oval plain 3 miles by 2, and across to the firepit. Automobiles descend by a more gradual route to a parking space (left foreground). The airplane flying above the firepit appears small and ineffectual by contrast with nature's colossal bomber which chooses its own time to pour forth flaming destruction.